

## 6345.0 - Wage Price Index, Australia, Jun 2014

Previous ISSUE Released at 11:30 AM (CANBERRA TIME) 13/08/2014

## Summary

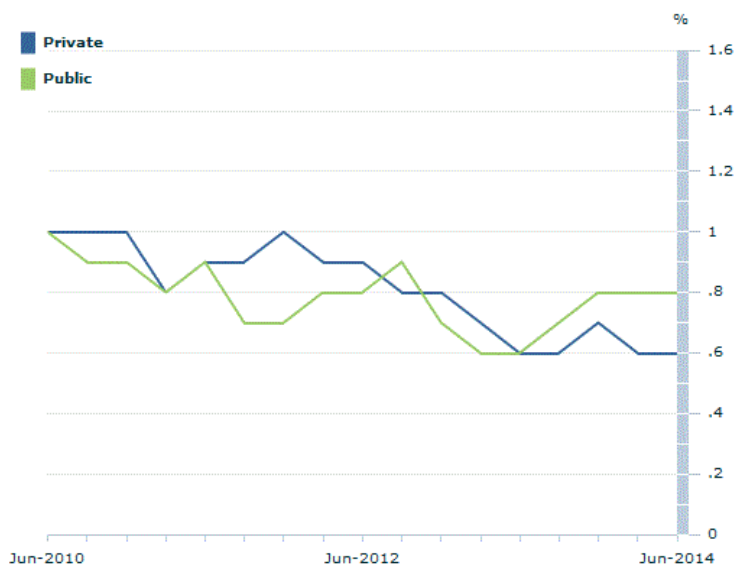
### Main Features

#### JUNE KEY FIGURES

			Mar Qtr 2014 to Jun Qtr 2014 % change	Jun Qtr 2013 to Jun Qtr 2014 % change
Wage Price Index (WPI)				
Total hourly rates of pay excluding bonuses				
Trend(a)				
	Australia		0.6	2.6
	Sector			
		Private	0.6	2.5
		Public	0.8	3.0
Seasonally Adjusted(b)				
	Australia		0.6	2.6
	Sector			
		Private	0.6	2.4
		Public	0.6	2.8
Original				
	Australia		0.4	2.6
	Sector			
		Private	0.4	2.5
		Public	0.3	2.9

(a) See Explanatory Notes paragraphs 42-43, 46. (b) See Explanatory Notes paragraphs 35-41, 46.

Quarterly changes, Trend, Total hourly rates of pay excluding bonuses

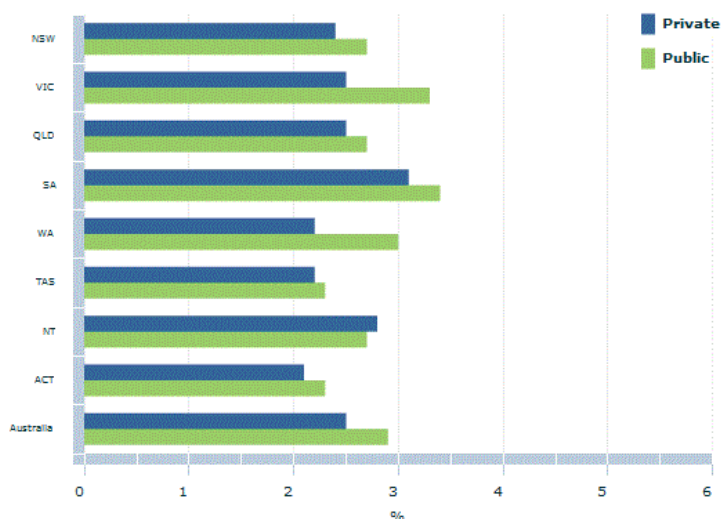


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Australian Bureau of Statistics

Source(s): Quarterly changes, Trend, Total hourly rates of pay excluding bonuses-Web Page Graph 1

Annual change, Original, Total hourly rates of pay excluding bonuses, States & Territories



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Source(s): Annual change, Original, Total hourly rates of pay excluding bonuses, States and Territories-Web Page Graph 2 - Annual change Original

## JUNE KEY POINTS

### TOTAL HOURLY RATES OF PAY EXCLUDING BONUSES

#### QUARTERLY CHANGE (MAR QTR 2014 TO JUN QTR 2014)

- The trend index and the seasonally adjusted index for Australia rose 0.6% in the June quarter 2014.
- In seasonally adjusted terms, both the Private and Public sector wage price indexes rose 0.6%.
- The rises in indexes at the industry level (in original terms) ranged from 0.1% for Accommodation and food services, Public administration and safety, and Arts and recreation services to 0.9% for Mining.

#### ANNUAL CHANGE (JUN QTR 2013 TO JUN QTR 2014)

- The trend index and the seasonally adjusted index for Australia rose 2.6% through the year to the June quarter 2014.
- Rises in the original indexes through the year to the June quarter 2014 at the industry level ranged from 2.0% for both Wholesale trade and Professional, scientific and technical services to 3.2% for Education and training.

## NOTES

### FORTHCOMING ISSUES

#### ISSUE (QUARTER)

September 2014  
December 2014  
March 2015  
June 2015

#### Release Date

12 November 2014  
25 February 2015  
13 May 2015  
12 August 2015

### CHANGES IN FUTURE ISSUES

From the December quarter 2014, all index numbers will be calculated on a new index reference period of 2011-12. This will result in index numbers for each index series being reset to 100.0 for the financial year 2011-12. Period-to-period percentage changes may differ to those previously published due to rounding and the re-referencing. These differences will not constitute a revision.

### ABS DATA AVAILABLE ON REQUEST

Original indexes are compiled for various combinations of state/territory, sector and broad industry group. Indexes not included in this publication may be made available on request by telephoning WPI in Perth on (08) 9360 5151 or email [wage.price.index@abs.gov.au](mailto:wage.price.index@abs.gov.au).

## DATA REFERENCES

Data referenced in the Key Points and Commentary are available from the tables shown in this publication or in the corresponding tables of this publication on the ABS website <<https://www.abs.gov.au>>.

## INQUIRIES

For further information about these and related statistics, contact the National Information and Referral Service on 1300 135 070 or WPI on Perth (08) 9360 5151. The ABS Privacy Policy outlines how the ABS will handle any personal information that you provide to us.

# Commentary

## COMMENTARY

### WAGE PRICE INDEXES

#### Australia/Sector (trend)

In the June quarter 2014, the Private sector index rose 0.6% and the Public sector rose 0.8%. The All sectors quarterly rise was 0.6%.

The Private sector through the year rise to the June quarter 2014 of 2.5% was smaller than the Public sector rise of 3.0%. Through the year, All sectors rose 2.6%.

#### Australia/Sector (seasonally adjusted)

In the June quarter 2014, the All sectors, Private and Public sectors wage price indexes all rose 0.6%.

For the fourth consecutive quarter, the All sectors through the year rise was 2.6%. The Private sector through the year rise of 2.4% was the smallest recorded since the commencement of the series. The Public sector through the year rise was 2.8%.

#### Australia/Sector (original)

Wages rose 0.4% in the June quarter 2014 for All sectors. The Private sector rose 0.4% in the June quarter 2014, larger than the Public sector rise of 0.3%. For both All sectors and the Private sector, the quarterly rises were the equal smallest recorded in the series. The All sectors quarterly rise of 0.4% was last recorded in June quarter 2013; the Private sector quarterly rise of 0.4% was last recorded in June quarter 1998.

The All sectors through the year rise was 2.6%. The Private sector rose 2.5% and the Public sector 2.9%.

#### State/Territory (original)

In the June quarter 2014, Victoria recorded the largest quarterly rise of 0.6% of all states and territories, and was the only state or territory to record a larger rise in the current quarter than in the June quarter 2013.

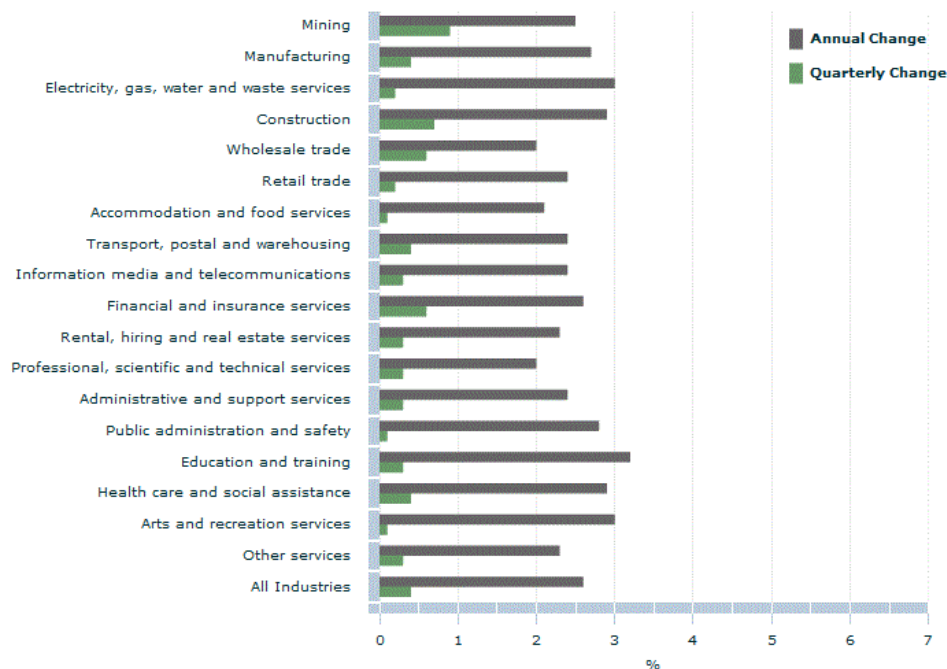
Rises through the year ranged from 2.3% for Tasmania and the Australian Capital Territory, to 3.1% for South Australia.

In the Private sector, the quarterly rise for Victoria of 0.6% was the largest quarterly rise of all states and territories. The smallest quarterly rise was 0.3%, recorded in Queensland, South Australia, Western Australia, Tasmania and the Australian Capital Territory. Rises through the year in the Private sector ranged from 2.1% for the Australian Capital Territory to 3.1% for South Australia. New South Wales (2.4%) recorded its smallest through the year rise since the commencement of the Wage Price Index.

In the Public sector, Victoria and Queensland recorded the largest quarterly rise of 0.4%, and the Northern Territory recorded the smallest quarterly rise of 0.1%. The Public sector quarterly rise for Western Australia of 0.2% was lower than for the June quarter of 2013 (1.3%). This is mostly the result of Western Australian Public sector employees not receiving pay rises in the June quarter 2014 as they did in the June quarter 2013. South Australia recorded the largest through the year Public sector rise of 3.4%. The smallest through the year rise for the Public sector of 2.3% was recorded by Tasmania and the Australian Capital Territory.

#### Industry (original)

Annual & Quarterly changes, Original, Total hourly rates of pay excluding bonuses, Industry



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Australian Bureau of Statistics

**Source(s):** Annual and Quarterly changes, Original, Total hourly rates of pay excluding bonuses, Industry-Web Page Graph 3 - Annual and Quarterly changes Original by Industry

In the June quarter 2014, Mining recorded the largest quarterly rise of 0.9% for All sectors. The smallest quarterly rise for All sectors of 0.1% was recorded by Accommodation and food services; Public administration and safety; and Arts and recreation services.

Mining, Professional, scientific and technical services, Administrative and support services, and Other services were the only industries to record larger quarterly rises when compared to the same quarter the year before.

Electricity, gas, water and waste services (0.2%) and Public administration and safety (0.1%) recorded their smallest quarterly rises since the commencement of the series.

The All sectors through the year rises to the June quarter 2014 ranged from 2.0% for Wholesale trade and Professional, scientific and technical services to 3.2% for Education and training.

In the Private sector, Mining recorded the largest quarterly rise of 0.9%. Electricity, gas, water and waste services, Retail trade, Accommodation and food services and Arts and recreation services all recorded the smallest rise of 0.2%. Rises through the year in the Private sector ranged from 1.9% for Professional, scientific and technical services to 3.4% for Education and training.

In the Public sector, Health care and social assistance recorded the largest quarterly rise of 0.7%. Professional, scientific and technical services recorded no growth (0.0%). Rises through the year in the Public sector ranged from 2.8% for Public administration and safety and Health care and social assistance to 3.3% for Electricity, gas, water and waste services.

## Use of Price Indexes in Contracts

### USE OF PRICE INDEXES IN CONTRACTS

Price indexes published by the Australian Bureau of Statistics (ABS) provide summary measures of the movements in various categories of prices over time. They are published primarily for use in Government economic analysis. Price indexes are also often used in contracts by businesses and government to adjust payments and/or charges to take account of changes in categories of prices (Indexation Clauses).

Topics @ a Glance - Inflation and Price Indexes contains a page Use of Price Indexes in Contracts that sets out a range of issues that should be taken into account by parties considering including an Indexation Clause in a contract using an ABS published price index.

# Frequently Asked Questions

## FREQUENTLY ASKED QUESTIONS

The Wage Price Index FAQs page has answers to a number of common questions to do with price indexes and the Wage Price Index, in particular.

## About this Release

The Wage Price Index measures changes in the price of labour services resulting from market pressures, and is unaffected by changes in the quality or quantity of work performed. It is unaffected by changes in the composition of the labour force, hours worked, or changes in characteristics of employees (e.g. work performance). Information about the wage price indexes has been released for each quarter since September 1997. Individual indexes are published for various combinations of state and territory, public and private sectors, and broad industry groups.

## Average Weekly Earnings and Wage Price Index - What do they measure? (Feature Article)

### FEATURE ARTICLE: AVERAGE WEEKLY EARNINGS AND WAGE PRICE INDEX – WHAT DO THEY MEASURE?

#### INTRODUCTION

The ABS publishes a variety of information on wages and salaries (often referred to as 'earnings') from both household and employer surveys. These data have many uses including economic analysis, social research, policy formulation and evaluation, and research by employer and employee associations. The decision on which data to use should depend on the purpose and type of analysis to be undertaken.

The six monthly Average Weekly Earnings (AWE) and quarterly Wage Price Index (WPI) collections both measure the wages and salaries of employees. These collections have different purposes and, as a result, use different methodologies.

This article begins by outlining the purpose and key uses of AWE and WPI. The article then briefly describes the AWE and WPI methodologies, and uses examples based on hypothetical labour market conditions to demonstrate how the two surveys can respond differently to economic events.

#### BACKGROUND

Examining changes in wages and salaries assists in identifying inflationary pressures in the economy as well as highlighting structural changes in the labour market. As wages and salaries paid to employees represents a significant component of operating costs for businesses, changes in wages and salaries can highlight cost pressures facing businesses. Changes in wages and salaries can reflect the impact of the economic cycle on the labour market or sections within the labour market.

The AWE and WPI collections aim to measure different, albeit related, concepts. The AWE is part of the suite of statistics designed to capture employee remuneration (for more detail please see the Feature Article ['Understanding Earnings in Australia Using ABS Statistics' in the July 2014 issue of Australian Labour Market Statistics, cat. no. 6105.0](#)). AWE is designed to measure earnings, which consist of payments-in-cash and payments-in-kind such as fringe benefits ([Labour Statistics: Concepts, Sources and Methods, 2013, cat. no. 6102.0.55.001](#)). In practice, however, it is only practical for ABS earnings series to include wages and salaries in cash as well as salary sacrifice arrangements (which are in-kind payments that are at the discretion of the employee). The WPI is designed to measure inflationary pressures associated with the Compensation of Employees (CoE), as outlined by the [System of National Accounts \(2008\)](#). Theoretically, WPI would include all elements of CoE, but for practical reasons it focuses on wages and salaries payments in cash, as well as salary sacrifice payments. Thus, despite differences in the underlying aims of the two collections, there is considerable commonality in the scope of the two collections. For the sake of simplicity, the term 'wages and salaries' has been used to refer to the scope of WPI and AWE throughout this article.

The WPI measures changes in the wages and salaries paid by employers for a unit (i.e. hour) of labour where the quality and quantity of labour are held constant. It has the dual purpose of monitoring wages and salaries inflation in the economy and supporting the compilation of the Australian System of National Accounts. To achieve this, the WPI uses a Laspeyres index methodology (where the price in a particular period is compared to that in a previous fixed period) designed to produce a measure of pure price change in wages and salaries independent of compositional factors (i.e. the quantity and quality of labour are held constant). 'Quantity' refers to compositional factors such as the effect of changing hours paid for and number of employees. 'Quality' refers to changes in job specifications or job holder characteristics such as employee performance or relative level of experience. These factors are held constant by ensuring that jobs are matched between quarters with no change in job specifications and by holding weekly hours constant between quarters. Adjustments to remove changes in quality and quantity are made during the statistical production phase of the WPI survey.

In contrast, the AWE is designed to provide an accurate estimate of the current average value of wages and salaries paid to employees by an employer over a specified period. The emphasis placed on producing a contemporary measure of average wages and salaries means that the AWE reflects structural changes that occur over time (such as changes in hours paid for and

employment). The AWE achieves this by collecting payroll data for a specified period. This method allows quantity and quality (i.e. compositional effects) to be included in the AWE outputs. The examples in the next section demonstrate how AWE and WPI will be affected differently by real world economic events.

## EXAMPLES DEMONSTRATING THE EFFECT OF LABOUR MARKET CHANGES ON AWE AND WPI GROWTH RATES

To illustrate the way in which the AWE and WPI respond to various changes in the labour market the following simplified examples using hypothetical data are provided.

Consider an initial population (period 0) of three businesses with a combined total of eight occupied jobs. The four examples that follow contain period 1 data with a change in either: (1) the number of employees; (2) the weekly hours paid for (hereafter referred to as 'hours'); (3) market based changes to the hourly rates; or (4) non-market based changes to the hourly rates. For illustrative purposes the examples require a number of assumptions to be made:

- All jobs/businesses are collected from the hypothetical population. In reality, the AWE and WPI are both stratified sample based surveys and do not sample all possible jobs or businesses within the economy;
- The examples ensure that changes are only applied to one variable (hours, employment, or hourly rate) at a time to allow the impact on the respective estimates to be isolated. In the real economy, these changes occur concurrently, and separately identifying the impact of these changes is difficult;
- Changes to employment and hours are applied uniformly and in a consistent direction across the population in these examples. In reality, employment or hours can change in different directions and by varying magnitudes within different sections of the economy, which can result in complex distributional effects;
- The WPI index methodology incorporates expenditure value data to combine elementary aggregates (groupings of similar jobs) in the aggregation process (see [Wage Price Index: Concepts, Sources and Methods, 2012, cat. no. 6351.0.55.001](#)). There is only one elementary aggregate in this example, so expenditure values are not required; and
- Period 0 is assumed to be the index reference period for WPI, resulting in an index number of 100.0 being used in this example.

Consider period 0 data below:

**Period 0 — Data used for Examples 1-4**

Business ID	Job ID	Weekly Hours	Hourly Rate	Weekly Wages and Salaries
Business A	Job 1	38	24.50	931.00
	Job 2	38	24.71	938.98
	Job 3	38	23.83	905.54
Business B	Job 4	38	44.64	1 696.32
	Job 5	38	45.25	1 719.50
	Job 6	38	52.13	1 980.94
Business C	Job 7	38	19.85	754.30
	Job 8	38	32.74	1 244.12
Total	8			10 170.70

Average weekly earnings can be calculated using the following formula:

Equation 1:

$$AWE_t = \frac{\sum \text{Weekly Earnings}}{\sum \text{Employees}}$$

In period 0:

$$AWE_0 = \frac{10\,170.7}{8} = \$1271.34$$

As stated earlier, the WPI in period 0 is 100.0. To calculate wages growth in the WPI (and the change in the AWE), period 1 data are required.

### Example 1: Employment Change

**Period 1 — AWE and WPI comparison, with the addition of two jobs**

Business ID	Job ID	Weekly Hours	Hourly Rate	Weekly Wages and Salaries
Business A	Job 1	38	24.50	931.00
	Job 2	38	24.71	938.98
	Job 3	38	23.83	905.54

Business B	Job 4	38	44.64	1 696.32
	Job 5	38	45.25	1 719.50
	Job 6	38	52.13	1 980.94
Business C	Job 7	38	19.85	754.30
	Job 8	38	32.74	1 244.12
	Job 9	38	19.85	754.30
	Job 10	38	19.85	754.30
Total	10			11 679.30

In this example, business C has hired two additional employees between period 0 and period 1. The weekly hours and hourly rates of the existing jobs are held constant between the two periods. First, AWE is calculated in period 1 using equation 1:

$$AWE_1 = \frac{11679.30}{10} = \$1167.93$$

Therefore, the percentage change in the AWE from period 0 to period 1 is:

$$\left[ \frac{1167.93 - 1271.34}{1271.34} \right] * 100 = -8.1\%$$

In this case, the addition of the two new employees causes a drop in the AWE, since the weekly earnings of both employees are below the period 0 average. If the new employees received weekly earnings above the period 0 average, the AWE would show a rise.

This can be compared to the effect on the WPI. In the absence of expenditure values, the change in the WPI is calculated as a ratio of weighted average prices, using the following formula:

Equation 2:

$$R_t = \frac{\sum p_t h_0}{\sum p_0 h_0}$$

Where:  $R_t$  is known as the current period (period 1 in this case) 'price relative';  $p_t$  is the current period hourly rate;  $p_0$  is the index reference period hourly rate; and  $h_0$  is the weekly hours which are held constant from the index reference period.

The WPI measures price changes to constant quantity and quality, so only jobs that are matched between periods will contribute to the index. Since jobs 9 and 10 are not matched between period 0 and 1, they will not contribute to the index until two periods of data are obtained for these jobs.

Therefore:

$$R_1 = \frac{10\ 170.70}{10\ 170.70} = 1$$

To calculate the new WPI index number ( $I_t$ ), the index number from the index reference period ( $I_0$ ) is multiplied by the price relative in the current period ( $R_t$ ):

Equation 3:

$$I_t = I_0 * R_t$$

In period 1:

$$I_t = 100.0 * 1 = 100.0$$

In this case, there is no change to the WPI as a result of the increase in the number of employees in Business C as they are not yet included in the index calculation. The exclusion of the new employees from the index calculation means that there has been no change in the hourly rate between periods 0 and 1.

## Example 2: Change in Hours

### Period 1 — AWE and WPI comparison, with a uniform increase in hours worked for all jobs

Business ID	Job ID	Weekly Hours	Hourly Rate	Weekly Wages and Salaries
Business A	Job 1	40	24.50	980.00
	Job 2	40	24.71	988.40
	Job 3	40	23.83	953.20
Business B	Job 4	40	44.64	1 785.60
	Job 5	40	45.25	1 810.00

	Job 6	40	52.13	2 085.20
Business C	Job 7	40	19.85	794.00
	Job 8	40	32.74	1 309.60
Total	8			10 706.00

In this example, hours worked have increased from 38 to 40 for all jobs in the population. This has resulted in a rise in weekly wages and salaries for all jobs. AWE can be recalculated in period 1 using equation 1:

$$AWE_1 = \frac{10706.00}{8} = \$1338.25$$

Therefore, the percentage change in the AWE from period 0 to period 1 is:

$$\left[ \frac{1338.25 - 1271.34}{1271.34} \right] * 100 = 5.3\%$$

A uniform increase/decrease in hours worked will always result in a rise/fall in the AWE when hourly rates and the number of employees are held constant. In reality, changes in hours worked are rarely uniform across the economy and distributional effects will also affect the results. For example, hours may increase in relatively high paid sectors of the economy and decrease in relatively low paid sectors. In this case, there may be no change in aggregate hours worked, but average weekly earnings would still rise.

Equation 2 for the WPI price relative ( $R_t$ ) shows that the hours worked ( $h_0$ ) are held constant between periods. The current period hours do not enter the formula. Therefore, the WPI price relative is calculated as follows:

$$R_1 = \frac{10170.7}{10170.7} = 1$$

There is no change in the WPI regardless of the magnitude or distribution of the change in hours worked within the population (assuming no change in the hourly rate).

### Example 3: Market based pay rise

#### Period 1 — AWE and WPI comparison, with a 'Market based' pay rise

Business ID	Job ID	Weekly Hours	Hourly Rate	Pay change	Weekly Wages and Salaries
Business A	Job 1	38	25.48	4%	968.24
	Job 2	38	25.70	4%	976.60
	Job 3	38	24.78	4%	941.64
Business B	Job 4	38	44.64	0%	1 696.32
	Job 5	38	45.25	0%	1 719.50
	Job 6	38	57.34	10%	2 178.92
Business C	Job 7	38	19.85	0%	754.30
	Job 8	38	32.74	0%	1 244.12
Total	8				10 479.64

In this example, there has been a rise in the hourly rate for jobs 1, 2, 3 and 6 between periods 0 and 1. It is assumed that these rises are purely 'market based' (i.e. rises are determined solely by market based factors, such as broad based CPI increases, Enterprise Agreement rises or minimum wage rises). AWE can be recalculated in period 1 using equation 1:

$$AWE_1 = \frac{10479.64}{8} = \$1309.96$$

Therefore, the percentage change in the AWE from period 0 to period 1 is:

$$\left[ \frac{1309.96 - 1271.34}{1271.34} \right] * 100 = 3.0\%$$

As the increases are considered 'market based' and the quantity and quality of labour are held constant the WPI price relative is calculated, using equation 2, as follows:

$$R(WPI)_1 = \frac{10479.64}{10170.70} = 1.03$$

From equation 3, the new index number can be calculated as 103.0 in period 1.

$$100 * 1.03 = 103.0$$



The period 0 and period 1 indexes can be used to calculate a quarterly movement of 3.0%.

$$\frac{(103.0 - 100.0)}{100.0} * 100 = 3.0\%$$

In this example, AWE and WPI produce the same result.

#### Example 4: Performance based pay rise

In this example, it is assumed that the pay changes that occur between period 0 and period 1 described in example 3 are based on factors unrelated to the market, such as good performance or the relative level of employee experience in the job. In other words, the pay changes occur due to changes in the 'quality' of the jobs.

This distinction does not impact on the calculation of the AWE. The change between periods 0 and 1 is still 3.0%. However, this change in quality is removed from the WPI during processing and would result in no movement being observed for the WPI under this example.

## CONCLUSION

The above examples are highly simplified and provided for illustrative purposes only. They should not be taken as hypotheses for historical divergences between the series. In reality, the changes to employment, pattern of hours, and non-market changes described above do not occur in isolation and are seldom spread uniformly across the economy. In practice, it is virtually impossible to disentangle these effects and pinpoint the precise cause of any given movement in the AWE series. Movements in the AWE result from a complex interrelationship between distributional influences and changes in hours, employment levels and pay rates that can often be pulling in different directions.

The choice of using WPI or AWE growth rates will be dictated by the purpose of analysis. If analysis is focused on current value of average wages and salaries that reflects contemporary structural change in the labour market (e.g. changes in employment in particular industries), then AWE should be the preferred measure. If analysis is concerned with the inflationary pressure associated with wages and salaries, then users should consider using the WPI.

# Explanatory Notes

## Explanatory Notes

### EXPLANATORY NOTES

#### INTRODUCTION

1 This publication contains indexes measuring changes in the price of wages and salaries in the Australian labour market.

2 The methodology used to construct the WPIs is similar to that used for other price indexes such as the Consumer Price Index. In the Wage Price Index (WPI), index numbers are compiled using information collected from a representative sample of employee jobs within a sample of employing organisations. Individual indexes are compiled for various combinations of state/territory, sector (private/public) and broad industry group. Industry is classified according to the **Australian and New Zealand Standard Industrial Classification (ANZSIC) 2006** (cat. no. 1292.0). For more detailed information on the methodology used in the construction of the WPI, refer to **Wage Price Index: Concepts, Sources and Methods** (cat. no. 6351.0.55.001).

#### CURRENT PUBLISHED INDEXES

3 Four WPIs are constructed and published quarterly. These indexes were first compiled for the September quarter 1997, and cover:

- ordinary time hourly rates of pay excluding bonuses index
  - ordinary time hourly rates of pay including bonuses index
  - total hourly rates of pay excluding bonuses index
  - total hourly rates of pay including bonuses index.
- In these indexes the term 'bonuses' refers to bonuses and commissions.

#### DISCONTINUED INDEXES

4 Four non-wage indexes were constructed and published annually each September quarter. These indexes were first compiled for the 2001-02 financial year, and cover:

- annual and public holiday leave index
- superannuation index
- payroll tax index

- workers' compensation index.

5 These four non-wage indexes were combined with the total hourly rates of pay indexes to produce two total labour price indexes

- labour price index including bonuses
- labour price index excluding bonuses.

6 These indexes have been discontinued with the last data in the series relating to the 2010-11 financial year. Historical data for these indexes can be found in the September quarter 2011 edition of this publication, and the corresponding time series spreadsheets on the ABS website.

## DESIGN OF THE INDEXES

### BROAD DESCRIPTION

7 The WPIs measure changes over time in the price of wages and salaries unaffected by changes in the quality or quantity of work performed. A range of procedures have been developed to identify and measure quality and quantity changes and ensure that only pure price changes are reflected in the indexes.

8 Price-determining characteristics of the jobs are fixed to ensure that changes in these characteristics do not contribute toward index movements. The following are examples of changes in price-determining characteristics which are not reflected in index movements:

- changes in the nature of work performed (e.g. different tasks or responsibilities)
- changes in the quantity of work performed (e.g. the number of hours worked)
- changes in the characteristics of the job occupant (e.g. age, apprenticeship year, successful completion of training or a qualification, grade or level, experience, length of service, etc.)
- changes in the location where the work is performed.

9 Changes in the price of wages and salaries resulting from changes in the composition of the labour market are also excluded from index movements. To achieve this, a longitudinal survey methodology is used to measure a similar sample of jobs over time. Once a business is selected in the sample, it will be expected to provide data for a sample of jobs for a minimum of five years.

### WAGE PRICE INDEXES

10 The **ordinary time hourly rates of pay indexes that exclude bonuses** measure quarterly changes in ordinary time hourly wage and salary rates. Changes in rates of pay reflected in these indexes (i.e. pure price changes) arise from a range of sources including award variations, enterprise and workplace agreements, minimum wage setting, individual contracts and informal arrangements.

11 These indexes are not affected by changes in:

- penalty payments for overtime, shifts, weekends and public holidays (which fluctuate depending on the number of hours paid at penalty rates)
- allowances which fluctuate (such as those paid according to how much work is performed under special work conditions e.g. height, dirt, heat allowances)
- bonus payments (which may, or may not, relate to an individual's work performance). These payments are specifically excluded when calculating ordinary time hourly wage and salary rates.

12 The effect of rolling ordinary time penalty payments and allowances into ordinary time hourly rates is excluded from these indexes. However, when overtime penalty payments and non-separable shift allowances are rolled into ordinary time hourly rates, the ordinary time indexes will increase accordingly.

13 The **total hourly rates of pay indexes that exclude bonuses** are based on a weighted combination of ordinary time hourly wage and salary rates (described in paragraphs 10 and 11) and overtime hourly rates. As a result, the total hourly rates of pay indexes reflect changes in both the ordinary time and overtime hourly rates. However, the effect of changes in the amount of overtime paid at each overtime rate is not shown in these indexes.

14 Only those indexes that exclude bonuses and commissions are pure price indexes because bonus and commission payments can reflect changes in the quality of work performed. No attempt is made to remove this quality element from the indexes that include bonuses and commissions.

### SCOPE AND COVERAGE

15 The target population of employers for the WPIs are all employing organisations in Australia (private and public sectors) except:

- enterprises primarily engaged in agriculture, forestry or fishing
- private households employing staff
- foreign embassies, consulates, etc.

**16** A sample redesign was undertaken and the outcome implemented from the December quarter 2009. A result of this review was to stop collecting data on a quarterly basis from micro businesses (0-4 employment). The size and frequency of pay changes for jobs in micro businesses was found to be the same as businesses with employment of five or more. Therefore, micro businesses are now treated as being out of coverage but remain in scope through their continued inclusion in the expenditure weights used in compiling the WPIs. The introduction of this change does not impact what the indexes are measuring.

**17** All employee jobs in the target population of employers are in scope of the WPIs, except the following:

- Australian permanent defence force jobs
- non-salaried directors
- proprietors/partners of unincorporated businesses
- persons paid by commission only
- working proprietors/owner managers of Pty Ltd companies
- employees on workers' compensation who are not paid through the payroll
- 'non-maintainable' jobs (i.e. jobs that are expected to be occupied for less than six months of a year)
- jobs for which wages and salaries are not determined by the Australian labour market (e.g. most employees of Community Development Employment Programs, or jobs where the remuneration is set in a foreign country).

**18** As such, full-time, part-time, permanent, casual, managerial and non-managerial jobs are in scope. Costs incurred by employers for work undertaken by self-employed persons such as consultants and subcontractors are out-of-scope, as they do not relate to employee jobs.

## **DATA COLLECTION**

**19** Information for the WPI is collected each quarter by mail questionnaires from a sample survey of private and public sector employers selected from the ABS Business Register. The survey reference date is the last pay period ending on or before the third Friday of the middle month of the quarter. Data for bonuses are collected in respect to those bonuses paid during the three month period ending on the third Friday of the middle month of the quarter.

**20** In the first quarter they participate in the survey, each employer selects a sample of jobs from their workplace(s) using sampling instructions provided by the ABS, and provides information for these jobs, including detailed pricing specifications. In subsequent quarters survey respondents are asked to provide details of payments made to the current occupants of these same jobs. It is essential that the same jobs are priced in successive quarters, whether the individual job occupants are the same or not. Approximately 18,000 matched jobs are priced each quarter from the selected employers.

**21** The sampling method retains the highest possible common sample of employers over time, and retains the same sampled jobs within those employers where possible. However, it is also necessary to ensure the WPIs continue to be relevant and representative over time. For these reasons, the employer sample is refreshed annually (for the December quarter) in a way that ensures a high proportion of common selections while allowing new employers to be represented in the sample. Refreshing the sample also allows the ABS to control the length of time that small businesses are included in the sample.

**22** Between each annual refresh of the employer sample, a small number of employee jobs will be lost from the survey sample because of the closure of some businesses. In addition, some jobs in continuing businesses will be replaced in the sample because of restructuring and other job changes.

## **WEIGHTING**

**23** Weighting practices vary at different levels of the WPI. WPI expenditure weights are a measure of the relative importance of each elementary aggregate (EA), based on employers' expenditure on wages and salaries. Below the EA level, sample weights applied to each job on the WPI survey indicate the number of jobs in the Australian labour market a particular sampled job represents.

**24** Businesses selected in the WPI are assigned sample weights according to the number of similar businesses they represent in their state, industry and sector. Jobs are similarly assigned sample weights according to the number of jobs they represent in that business. The total sample weight for a job is determined by multiplying business and job sample weights together. This total sample weight indicates the number of jobs in the Australian labour market, a particular sampled job represents.

**25** To ensure the WPI sample remains representative, the latest total employment figures for each business on the WPI survey are obtained from providers each September quarter. Job weights are updated based on these employment figures and applied to the WPI sample each December quarter.

**26** The Laspeyres index methodology requires that prices in each period are compared to those in a given base period. To ensure the index remains relevant, expenditure weights need to be updated to reflect changes in expenditure patterns. Once updated, the weights are fixed again, and a new weighting reference period is created. In the following quarters, prices will be compared using this new weighting reference period. This process is referred to as reweighting.

**27** The December quarter 2013 weight update uses expenditure on wages and salaries from the 2012 Survey of Employee Earnings and Hours adjusted for price change to represent current period values.

**28** When the expenditure weights are updated, the published index numbers will not recommence at 100.0. Instead, the series based on the old expenditure weights and that based on the new weights are linked to form a continuous series via an arithmetic calculation, which is referred to as chaining. This provides a continuous series from the commencement of the index, while incorporating the updated expenditure weights.

## INTERPRETATION OF INDEX NUMBERS

**29** Index numbers in this publication measure changes in the price of wages and salaries between the commencement of the series and a later period. Index number levels cannot be compared across states/territories as they do not provide comparative information on the relative levels of labour costs. Similarly, index number levels cannot be compared across sectors or industries. The usefulness of index numbers stems from the fact that index numbers for any two periods can be used to directly calculate the change or movement in the price of labour between the two periods. These **movements** can be compared across states/territories, sectors or industries.

## PERCENTAGE CHANGE AND ROUNDING

**30** The published index numbers have been rounded to one decimal place, and the percentage changes (also rounded to one decimal place) are calculated from the rounded index numbers. In some cases, this can result in the percentage change for the total level of a group of indexes being outside the range of the percentage changes for the component level indexes. Seasonally adjusted and trend quarterly estimates are calculated from unrounded original indexes. The percentage changes (rounded to one decimal place) are calculated from the rounded index numbers.

## INDEX MOVEMENTS

**31** Movements in indexes from one period to another can be expressed either as changes in index points or as percentage changes. In this publication, percentage changes are calculated to illustrate three different kinds of movements in indexes:

- movements between consecutive quarters
- movements between corresponding quarters of consecutive years (i.e. changes 'through the year')
- movements between consecutive financial years.

**32** The following example illustrates the method of calculating changes in index points and percentage changes between any two periods:

**Total hourly rates of pay excluding bonuses**, All Sectors, Australia Index numbers, trend (see table 1)

June quarter 2014 118.7

**less** June quarter 2013 115.7

Change in index points 3.0

Percentage change  $3.0/115.7 \times 100 = 2.6\%$

## FINANCIAL YEAR INDEXES

**33** Index numbers for financial years are calculated as simple (arithmetic) averages of the four quarterly index numbers for the financial year. As the WPIs were first produced for the September quarter 1997, the first financial year index number that can be calculated is for 1997-98. Consequently, the first percentage change between financial years that can be calculated is between 1997-98 and 1998-99. The following example illustrates the method of calculating the financial year index number for 2013-14:

**Total hourly rates of pay excluding bonuses**, Australia Index numbers, original (see table 2)

September quarter 2013 116.6

**plus** December quarter 2013 117.2

**plus** March quarter 2014 118.0

**plus** June quarter 2014 118.5

Financial year 2013-14  $470.3/4 = 117.6$

**34** Percentage changes between the index numbers for any two financial years can be calculated using the method outlined in paragraph 32 above.

## SEASONALLY ADJUSTED INDEXES

**35** Seasonally adjusted estimates are derived by estimating and removing systematic calendar related effects from the original series. In most economic data these calendar related effects are a combination of the classical seasonal influences (e.g. the effect of the weather, social traditions or administrative practices) plus other kinds of calendar related variations, such as the number of trading days, Easter or the proximity of significant days in the year (e.g. Christmas). In the seasonal adjustment process, both seasonal and other calendar related factors evolve over time to reflect changes in activity patterns. The seasonally adjusted estimates reflect the sampling and non-sampling errors to which the original estimates are subject.

**36** The **total hourly rates of pay excluding bonuses index** is the only index of the WPI that is seasonally adjusted. Institutional effects largely drive the seasonality of this index. Important factors in determining this seasonality are the timing of effect of agreements, the length of these agreements, and the timing of the implementation of significant wage determinations that impact on rates of pay. A significant institutional change in wage setting arrangements can affect the relative level (or trend) and seasonality of the index.

**37** Prior to 2006, the Australian Industrial Relations Commission (AIRC) handed down annual Safety Net Review (SNR) decisions

which set federal full-time minimum award rates. Since the commencement of the WPI, the SNR has contributed to the level of the index. Most of its impact on the WPI was in the September quarter with some residual effect in the December quarter each year. This impact contributed to the level of seasonality for those quarters. As a result of industrial relations changes associated with Work Choices there was no SNR decision in 2006. The setting of federal minimum wage rates became the responsibility of the Australian Fair Pay Commission (AFPC).

**38** The AFPC's first decision was handed down on 26 October 2006 with a date of effect of 1 December 2006. The impact on the WPI of the first AFPC ruling was mainly in the March quarter 2007. From 2007 to 2009, AFPC determinations impacted the December quarter WPI.

**39** On 1 July 2009 Fair Work Australia (FWA) began operations as part of a new national workplace relations system underpinned by the Fair Work Act 2009. In June 2010 FWA announced its first annual minimum wage decision and the increase impacted the WPI in the September quarter 2010. Since 2010, FWA minimum wage decisions have taken effect in the September quarter of each year and have resulted in a change of seasonality. To account for the change in timing, the seasonally adjusted and trend series were reanalysed in the September quarter 2010 to remove the influence of the different timing of minimum wage decisions in any year on the WPI.

## CONCURRENT SEASONAL ANALYSIS

**40** The WPI uses a concurrent seasonal adjustment methodology to derive the adjustment factors. This method uses the original time series available at each reference period to estimate seasonal factors for the current and previous quarters. Concurrent seasonal adjustment is technically superior to the more traditional method of reanalysing seasonal patterns once each year because it uses all available data to fine tune the estimates of the seasonal component each quarter. With concurrent analysis, the seasonally adjusted series are subject to revision each quarter as the estimates of the seasonal factors are improved. In most instances, the only significant revisions will be to the combined adjustment factors for the previous quarter and for the same quarter in the preceding year as the reference quarter (i.e. if the latest quarter is  $Q_t$  then the most significant revisions will be to  $Q_{t-1}$  and  $Q_{t-4}$ ). Seasonal patterns are also reanalysed when there are known changes to regular events. This can lead to additional revisions.

## ARIMA MODELLING

**41** The ABS uses Autoregressive Integrated Moving Averages (ARIMA) modelling techniques to produce seasonally adjusted estimates. ARIMA modelling is a technique that can be used to extend original estimates beyond the end of a time series. The extended values are temporary, intermediate values that are used internally to improve seasonal adjustment. They do not affect the original estimates and are discarded at the end of the seasonal adjustment process. The use of ARIMA modelling generally results in a reduction in revisions to the seasonally adjusted estimates when subsequent data becomes available. ARIMA modelling in the WPI was introduced in the June quarter 2008. For more information on the details of ARIMA modelling see the feature article 'Use of ARIMA modelling to reduce revisions' in the October 2004 issue of **Australian Economic Indicators** (cat. no. 1350.0).

## TREND ESTIMATES

**42** The trend is a measure of the underlying direction of a series. The ABS trend estimates for the WPI are derived by applying a 7-term Henderson-weighted moving average to all quarters of the respective seasonally adjusted indexes except the first three and last three quarters. Trend estimates are created for these quarters by applying surrogates of the 7-term Henderson weighted moving average to the seasonally adjusted indexes, tailored to each time series. In general, trend estimates give a better indication of underlying behaviour than the seasonally adjusted estimates. Please refer to the ABS Information Paper, **A Guide to Interpreting Time Series - Monitoring Trends** (cat. no. 1349.0).

**43** Increases in minimum wage rates contribute to the relative level (or trend) of the WPI. A review of the seasonally adjusted series was undertaken in the September quarter 2010 to remove the impacts of the different timing of the increases in minimum wage rates. A trend break correction has been applied between the June quarter and the September quarter 2009 to remove the shift in the underlying level as a result of no increase to minimum wage rates being awarded in 2009.

## INDEX REFERENCE PERIOD

**44** The index reference period of an index series is that period for which the value of the index is set to 100.0. It is most commonly a year but can also be a different length of time, ranging from two or three years down to a single quarter. It often coincides with the weighting base for the series, but this is not essential. The September quarter 1997 was used as the original index reference period for the WPIs as it was the first quarter for which data was available. With the introduction of the non-wage indexes, the index reference period was changed to 2003-04.

**45** With the implementation of the Australian and New Zealand Standard Industrial Classification 2006, all indexes are presented on an index reference period of 2008-09.

## REVISIONS TO INDEXES

**46** Original index numbers will be released as final figures at the time they are first published. Revisions will only occur in exceptional circumstances. Trend and seasonally adjusted indexes for some quarters will be revised as extra quarters are included in the series analysed for seasonal influences (see paragraphs 35 to 43).

## RELATED PUBLICATIONS

47 Users may also wish to refer to the following publications which are available free on the ABS website <<https://www.abs.gov.au>>:

**Wage Price Index: Concepts, Sources and Methods**, (cat. no. 6351.0.55.001)  
**Information Paper: Update on ANZSIC 2006 Implementation for Labour Price Index, Australia, 2009**, (cat. no. 6345.0.55.001)  
**Consumer Price Index, Australia**, (cat. no. 6401.0)  
**House Price Indexes, Eight Capital Cities**, (cat. no. 6416.0)  
**International Trade Price Indexes, Australia**, (cat. no. 6457.0)  
**Producer Price Indexes, Australia**, (cat. no. 6427.0)  
**Australian Consumer Price Index: Concepts, Sources and Methods**, (cat. no. 6461.0)  
**Producer and International Trade Price Indexes: Concepts, Sources and Methods**, (cat. no. 6429.0)  
**Australian Labour Market Statistics**, (cat. no. 6105.0)

48 Current publications and other products released by the ABS are listed on the ABS website <<https://www.abs.gov.au>>. The ABS also issues a daily Release Advice on the website which details products to be released in the week ahead.

## ABS DATA AVAILABLE ON REQUEST

49 As well as the statistics included in this and related publications, the ABS may have other relevant data available on request. Inquiries should be made to WPI on Perth (08) 9360 5151 or the National Information and Referral Service on 1300 135 070.

## Glossary

### GLOSSARY

#### Bonuses

Payments made to a job occupant that are in addition to regular wages and salaries and which generally relate to the job occupant's, or the organisation's, performance. In the WPI, the term 'bonuses' refers to bonuses and commissions.

#### Elementary aggregates

The finest aggregations of jobs, in terms of state/territory, sector and industry group, for which expenditure weights are available.

#### Employee job

A job for which the occupant receives remuneration in wages, salary, payment in kind, or piece rates.

#### Employer

Organisation with one or more employees.

#### Expenditure weights

A measure of the relative importance of each elementary aggregate, based on employers' total expenditure on wages and salaries. Expenditure weights are used to combine elementary aggregate indexes into broader level indexes.

#### Index number

Measures the ratio of the price of labour between the commencement of the index series and a later period.

#### Index reference period

The period for which an index series is given the value of 100.0. The current index reference period for the WPI is the 2008-09 financial year.

#### Industry

Classified according to the **Australian and New Zealand Standard Industrial Classification (ANZSIC), 2006** (cat. no. 1292.0).

#### Ordinary time hourly rates of pay index

Measures quarterly change in ordinary time hourly rates of pay (see Explanatory Notes paragraphs 10 and 11).

#### Ordinary time hours

Award, standard or agreed hours of work paid for at the ordinary rate.

## Overtime hours

The number of hours paid for in excess of ordinary time hours.

## Reference date

The reference date for this survey is the last pay period ending on or before the third Friday of the middle month of the quarter, except for bonuses which are collected in respect to those paid during the three month period ending on the third Friday of the middle month of the quarter.

## Sector

Public sector comprises local government authorities and all government departments and agencies created by, or reporting to, the Commonwealth, or state/territory parliaments. The private sector comprises all organisations not classified as public sector.

## Seasonal adjustment

Process of removing systematic calendar related effects from the original series (see Explanatory Notes paragraphs 35-41, 46).

## Total hourly rates of pay index

Measures quarterly change in combined ordinary time and overtime hourly rates of pay (see Explanatory Notes paragraph 13).

## Trend

A measure of the underlying direction of a series (see Explanatory Notes paragraphs 42-43, 46).

## Wage price index

Measures changes in the price of wages.

## Weight reference period

The period to which the expenditure weights relate.

# Abbreviations

## ABBREVIATIONS

ABS	Australian Bureau of Statistics
WPI	wage price index

# Distribution of expenditure on wages (Appendix)

## APPENDIX DISTRIBUTION OF EXPENDITURE ON WAGES

### AS UPDATED DECEMBER QUARTER 2013

#### A1 DISTRIBUTION OF EMPLOYERS' EXPENDITURE ON WAGES<sup>(a)(b)</sup>

	Private %	Public %	Total %
Australia by sector			
<b>Australia</b>	<b>77.0</b>	<b>23.0</b>	<b>100.0</b>
Sector by State/Territory			
New South Wales	30.5	29.0	30.1
Victoria	24.6	20.6	23.6
Queensland	19.4	19.5	19.4
South Australia	6.9	7.3	7.0
Western Australia	14.6	13.1	14.3
Tasmania	1.4	2.3	1.6
Northern Territory	1.1	1.6	1.2
Australian Capital Territory	1.7	6.6	2.8
<b>Australia</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>
Sector by broad industry group(c)			
Mining	4.4	(d)	3.4
Manufacturing	11.8	(d)	9.1
Electricity, gas, water and waste services	0.9	4.6	1.8
Construction	10.0	(d)	7.8
Wholesale trade	6.5	(d)	5.0

Retail trade	8.4	(d)	6.4
Accommodation and food services	4.4	(d)	3.4
Transport, postal and warehousing	5.1	(d)	5.5
Information media and telecommunications	2.7	(d)	2.2
Financial and insurance services	5.9	(d)	4.8
Rental, hiring and real estate services	1.8	(d)	1.5
Professional, scientific and technical services	12.7	2.0	10.3
Administrative and support services	7.5	(d)	5.8
Public administration and safety	0.6	32.2	7.9
Education and training	3.7	27.2	9.1
Health care and social assistance	8.5	23.1	11.9
Arts and recreation services	1.1	(d)	1.0
Other services	3.9	(d)	3.0
<b>All industries</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>

(a) See paragraphs 23-28 of the Explanatory Notes.

(b) Components may not sum to 100.0 due to rounding.

(c) Classified according to the **Australian and New Zealand Standard Industrial Classification (ANZSIC), 2006** (cat. no. 1292.0).

(d) For the Public sector, these industries are combined and included in the 'All industries' total.

## Quality Declaration - Summary

### INSTITUTIONAL ENVIRONMENT

For information on the institutional environment of the Australian Bureau of Statistics (ABS), including the legislative obligations of the ABS, financing and governance arrangements, and mechanisms for scrutiny of ABS operations, please see ABS Institutional Environment.

### RELEVANCE

The Wage Price Index measures changes over time in the price of labour services, unaffected by changes in the quality and quantity of work performed (that is, indexes are unaffected by compositional change). It enables analysts and policy makers to assess the impact of changes in wage costs on the labour market, the economy more generally, households and the community. The survey results are used in formulating industrial relations, wages policies and economic analysis.

Wages and salaries account for the majority of expenditure on labour costs by employers. The 'headline' measure of the wage price index is the total hourly rates of pay excluding bonuses index. Wage price indexes are released for state and territory; sector (private/public) and broad industry groups.

Industry is classified according to the *Australian and New Zealand Standard Industrial Classification (ANZSIC) 2006* (cat. no. 1292.0). Prior to the September quarter 2009, the ANZSIC 1993 version of the classification was used.

### TIMELINESS

Wage price indexes have been produced each quarter commencing from the September quarter 1997. The survey reference date is the last pay period ending on or before the third Friday of the middle month of the quarter, except for bonuses which are collected in respect to those paid during the three month period ending on the third Friday of the middle month of the quarter. Wage price indexes are released about three months after the reference date.

### ACCURACY

There are two principle sources of error in surveys, sampling error and non-sampling error. Non-sampling error arises from inaccuracies in collecting, recording and processing the data. Every effort has been made to reduce non-sampling error in the Wage Price Index by:

- careful design and testing of questionnaires and processing systems by providing instructions to businesses on how to select a sample of employee jobs
- detailed checking of completed survey forms
- instituting a range of procedures to ensure that jobs are priced to constant quality and quantity.

Sampling error occurs when a sample or subset of the population is surveyed rather than the entire population. One measure of the likely difference resulting from not including all of the population in the survey is given by the standard error. While the selection of employers and employee jobs are based on sampling techniques, standard errors are not available for the wage price index. While it is reasonably straightforward to calculate sampling errors for a level estimate such as the total number of employees jobs, it is not so straightforward to determine standard errors for the WPI which uses both sampling and index methodologies.

Original index numbers are released as final figures at the time they are first published. Revisions have never occurred and will only occur in exceptional circumstances. Trend and seasonally adjusted indexes are revised as extra quarters are included and seasonal factors are updated.

### COHERENCE

The methodology used to construct the WPI is similar to that used for other price indexes produced by the ABS such as the



Consumer Price Index and the Producer Price Indexes. The sample for the WPI, is selected from the ABS Business Register which is primarily based on registrations to the Australian Taxation Office's Pay As You Go Withholding scheme.

Employers are classified to an industry using the *Australian and New Zealand Standard Industrial Classification (ANZSIC) 2006* (cat. no. 1292.0). Up until June quarter 2009, the content and format of tables containing industry data reflected the 1993 version. Indexes for previous periods have been reproduced on an ANZSIC 2006 basis by reclassifying the businesses that reported data in earlier periods to the appropriate industry division of ANZSIC 2006. Index movements for Australia, state/territory, sector and All industries original series were not affected by the introduction of the new industry classification. Details about the change to ANZSIC 2006 are outlined in *Information Paper: Update on ANZSIC 2006 Implementation for the Labour Price Index, Australia 2009* (cat. no. 6345.0.55.001).

The ABS conducts a number of sample surveys of businesses which collect information about wages and salaries. One of these series, Survey of Average Weekly Earnings (AWE), is designed to measure the level of average earnings in Australia at a point in time. Period to period movements for the AWE series are not comparable with those from the wage price index. The two series have different purposes. Consequently, they have different concepts, and use different sample selection and estimation methodologies.

## INTERPRETABILITY

The WPI publication (cat. no. 6345.0) contains Explanatory Notes, Appendices and a Glossary that provide information about data sources, terminology and other technical aspects of the series. More detailed information can also be found in the *Wages Price Index, Concepts, Sources and Methods* (cat. no. 6351.0.55.001).

The total hourly rates of pay excluding bonuses index Australia and sector level indexes are the only indexes of the WPI that are seasonally adjusted.

## ACCESSIBILITY

For links to data and publications relating to the wage price index and other prices series, please see the Prices Noticeboard.

Additional wage price indexes are available on request. To make enquiries about such data, telephone WPI on Perth (08) 9360 5151 or email <wage.price.index@abs.gov.au>

## Quality Declaration - Relevance

The target population of businesses for the WPI is all employing organisations in Australia (private and public sectors) excluding:

- enterprises primarily engaged in agriculture, forestry or fishing
- private households employing staff
- foreign embassies, consulates, etc.

A sample redesign of the WPI was undertaken and the outcome implemented from December quarter 2009. A result of this review was to stop collecting data on a quarterly basis from micro businesses (0-4 employment). The size and frequency of pay changes for jobs in micro businesses was found to be the same as businesses with employment of five or more. Therefore, micro businesses are now treated as being out of coverage of the WPI but remain in scope through their continued inclusion in the expenditure weights used in compiling the WPI. The introduction of this change has not impacted what the WPI is measuring.

All employee jobs in the target population of businesses are in scope of the WPI, with the exception of the following:

- Australian permanent defence force jobs
- non-maintainable jobs (i.e. jobs that are expected to be occupied for less than six months of a year)
- jobs for which wages and salaries are not determined by the Australian labour market (e.g. working proprietors of small incorporated enterprises, most employees of Community Development Employment Programs, and jobs where the remuneration is set in a foreign country).

## Quality Declaration - Accuracy

Information for the wage price indexes is collected each quarter by mail questionnaires from a sample survey of approximately 3,000 private and public sector employers selected from the ABS Business Register. These employers select a sample of jobs from their workplace(s) using instructions provided by the ABS. Approximately 18,000 jobs are priced each quarter.

## Quality Declaration - Interpretability

Seasonally adjusted estimates are derived by estimating and removing systematic calendar related effects from the original series. In most economic data these calendar related effects are a combination of seasonal influences e.g. the weather, social traditions or administrative practices plus other kinds of calendar related variations, such as the number of trading days, Easter or the proximity of significant days (e.g. Christmas).

Institutional effects largely drive the seasonality of the WPI. Important factors are the timing of effect of Australian workplace agreements and certified agreements, the length of these agreements, and the timing of the implementation of significant wage determinations that impact on rates of pay. A significant institutional change in wage setting arrangements can affect the relative level (or trend) and seasonality of the index.

The ABS has implemented improved methods of producing seasonally adjusted estimates, focussed on the application of Autoregressive Integrated Moving Average (ARIMA) modelling. Adoption of ARIMA modelling reduces the extent of revisions to the seasonally adjusted and trend estimates. For more information on the details of ARIMA modelling see feature article: **Use of ARIMA modelling to reduce revisions** in the October 2004 issue of **Australian Economic Indicators** (cat. no. 1350.0).

## Time Series Spreadsheet (I-Note) - Time Series Spreadsheet

The wage price indexes in Tables 1, 2b, 3b, 4b, 5b, 7b, 8b and 9b are updated and released every quarter. The corresponding financial year wage price indexes in Tables 2a, 3a, 4a, 5a, 7a, 8a and 9a are updated and released each June quarter for the preceding financial year. There are no financial year indexes created for Table 1.

## Publication (I-Note) - Publication

The wage price indexes in Tables 1 to 10 are updated and released every quarter. The financial year wage price indexes that appear in Tables 2 to 10 are updated each June quarter for the preceding financial year.